CONSTRUCTION PLAN REVIEW CHECKLIST
FOR PRIVATE DEVELOPMENT

(Revised April 2002)

ADDITION NAME: _____

ENGINEER CONTACT/PHONE #: _____

CITY USE ONLY:

Date Submitted to City: _____

Reviewed By: _____

Date Review Completed: _____

PART I GENERAL

ENGR CITY A. GENERAL

_____ _____ 1. Plans submitted on 24" x 36" sheets.
_____ _____ 2. Three (3) sets of plans submitted.
_____ _____ 3. North arrow and scale of drawing shown on each sheet.
_____ _____ 4. Only benchmark(s) tied to a CITY GPS Benchmark datum are to be shown on each sheet.
_____ _____ 5. Title blocks shown on each sheet excluding cover sheet.
_____ _____ a. Title block completely filled out.
_____ _____ b. Title agrees with filed Final Plat.
_____ _____ 6. Engineer's seal, signature, and date on each sheet after all City comments have been addressed.
_____ _____ 7. Copy of filed Final Plat with signatures shall follow the coversheet.
_____ _____ 8. Copy of the City approved Site Plan shall follow the Final Plat.
_____ _____ 9. Easements shown on filed Final Plat correspond with locations of proposed utility lines. An Amended Final Plat will be required prior to construction if easement locations change.
_____ _____ 10. Erosion Control Plan submitted.
_____ _____ 11. Lot Grading Plan submitted. No grading on adjacent property without owner's permission.
_____ _____ 12. All lettering shall be 0.1" minimum size.
_____ _____ 13. Barricading Plan shown on plans.
_____ _____ 14. Proposed street light locations shall be shown. A contract between T.U. Electric and the owner shall be signed prior to final acceptance

of the project.

____ ____ 15. Are offsite easements required?

____ ____ 16. Add General Note to Plans: "The Contractor shall be responsible for obtaining a two (2) year, 25% Maintenance Bond on all water, sanitary sewer, storm drainage, pavement and excavation/fill within Right of Way or easements."

____ ____ 17. Add General Note to Plans: "The City of Grapevine's Inspector overtime policy allows the Contractor to work from 7 a.m. to 7 p.m., Monday through Saturday. No work is allowed on Sundays. Saturday work requires a four (4) hour minimum charge. Overtime charges of $45 per hour shall be paid by the Contractor to the City for work outside the normal work week (i.e. 8 a.m. to 5 p.m., Monday thru Friday)."

____ ____ 18. Are TxDOT permits required? (Driveway, Drainage, etc.)

ENGR CITY B. COVER SHEET

____ ____ 1. Location map of project.

____ ____ 2. Index to drawings.

____ ____ 3. Name, address, and telephone number of the Developer.

____ ____ 4. Name, address, and telephone number of the Engineer.

____ ____ 5. Project name (same as Final Plat) identified on right border of cover sheet.

PART II WATER SYSTEM IMPROVEMENTS

CITY

CITY USE ONLY: Proposed water system meets the requirements of the Water Distribution System Master Plan and the 10-Year Water and Sewer Plan.

____

ENGR CITY A. GENERAL

____ ____ 1. General notes for water system construction (No water jetting allowed).

____ ____ 2. All water lines within easements are inspected by Public Works. Private lines (outside of easements, beyond meters, not just within 5' of the building) are not inspected by Public Works. These lines shall be designed in accordance with the requirements of the City of Grapevine Building Department.

ENGR CITY B. PLAN VIEW

____ ____ 1. Size, type, and pressure class of all proposed water mains identified.

____ ____ 2. Location and size of all existing on-site water mains shown.

____ ____ 3. Location and size of all existing off-site water mains within 200' of property shown.

____ ____ 4. 12” water lines required in industrial areas. Variations will be based on 1,500 GPM availability during peak demand periods with a minimum residual pressure of 30 psi.

____ ____ 5. Profile and grades required for water mains 12" or greater.

____ ____ 6. Conflicts with existing or proposed utilities shown.

____ ____ 7. When crossing other utilities or storm drains, state whether water line goes over or under.

____ ____ 8. Names and phone numbers of utility company contacts having utilities in the area.

____ ____ 9. Standard construction detail of service line locations.

____ ____ 10. Location of existing and proposed sanitary sewer lines.

____ ____ 11. Location of existing and proposed storm drainage lines and inlets.

____ ____ 12. Location of existing and proposed pavement and R-O-W.

____ ____ 13. Profiles of proposed water lines crossing channel/ditch sections.

____ ____ 14. All lot and block numbers shown.

____ ____ 15. Location, width, and type of easements.

____ ____ 16. Water mains stubbed out to undeveloped adjacent property according to the Master Water Distribution Plan and/or City direction.

____ ____ 17. Proposed water main dimensioned to R-O-W.

____ ____ 18. Proposed water main located with the centerline 3.5’ from back-of-curbs on the north side of east-west streets and on the east side of north-south street. Variations require City staff approval.

____ ____ 19. Gate valves generally located outside paved streets 5’ from back of curb return to the intersecting street (generally located at street intersections, except for fire hydrant leads). Unless approved by City, valves shall be located at northeast quadrant of street intersections.

____ ____ 20. Extensions from existing mains start with a gate valve. Gate valve also provided at the end of lines where future extensions are to take place.

____ ____ 21. Gate valves shall not be located in sidewalks or barrier-free ramps.

____ ____ 22. Proposed water services dimensioned to lot corners if services are not in standard locations (Centerline of lot).

____ ____ 23. Legend, identify existing & proposed lines.

____ ____ 24. Water system has a two (2) way feed.

____ ____ 25. Assure that water main can be "valved down" without putting more than one fire hydrant out of service.

____ ____ 26. Fire Hydrants shown:
Residential: 500' along the main.
(500' maximum hose laying length)
Non Residential: 300' along the main.
(500' maximum hose laying length)

____ ____ 27. All fire hydrants have a clear 36" operating radius for the top nut.

____ ____ 28. Fire hydrants shall be located 2'-0" behind the pavement edge and shall not be located in the sidewalk.

____ ____ 29. Water lines shall be concrete encased when located between two residential lots.

____ ____ 30. Thrust blocking specified and in accordance with City standards (all bends, tees, crosses, plugs, fire hydrants, etc.).

____ ____ 31. Water meters shall be placed on the property lines whenever possible.

Public Works needs to authorize any variations.

____ ____ 32. All water meters 2” or larger shall have a bypass installed.

____ ____ 33. All water services larger than 1” shall have a gate valve installed adjacent to the main. Water services 1” and smaller can use a corporation stop.

ENGR CITY C. DETAILS

____ ____ 1. Water system standard construction details meet all City requirements.

____ ____ 2. Show standard trench backfill details and state compaction requirements.

PART III SANITARY SEWER SYSTEM IMPROVEMENTS

CITY

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CITY USE ONLY: Proposed sanitary sewer system meets the requirements of the Wastewater Collection System Master Plan and the 10-Year Water and Sewer Plan.

ENGR CITY A. GENERAL

____ ____ 1. General notes for sanitary sewer system construction (No water jetting allowed).

____ ____ 2. Names and phone numbers of utility company contacts having utilities in the area.

____ ____ 3. Table of lot numbers, line numbers, and sanitary sewer main station numbers for sanitary sewer service connections.

____ ____ 4. All sanitary sewer lines within easements are inspected by Public Works. Private sewer lines (outside of easements, not just within 5’ of the building) are not inspected by Public Works. These lines shall be designed in accordance with the requirements of the City of Grapevine Building Department.

ENGR CITY B. PLAN VIEW

____ ____ 1. Location and size of all existing on-site sanitary sewer lines shown.

____ ____ 2. Location and size of all existing off-site sanitary sewer lines within 200' of property shown.

____ ____ 3. Specify at minimum SDR-35 PVC pipe shall be used. SDR-26 pipe required for lines deeper than 20’ or within 9’ of a water line.

____ ____ 4. 6” minimum lines in residential areas (except apartments). 8” minimum lines in commercial, industrial, and apartment areas.

____ ____ 5. Conflicts with other existing or proposed utilities shown.

____ ____ 6. Lines located in the street halfway between the street centerline and curb on the south side of east-west streets and on the west side of north-south streets.

____ ____ 7. Dimensions from lot lines to service lines if service line is not in standard location (10' downstream of centerline of lot).
____ ____ 8. Residential service lines are SDR-35, 4” minimum. Non-residential service lines are 6” minimum and shall be connected to the main via a manhole.
____ ____ 9. Location of existing and proposed water mains (Dimensioned from ROW).
____ ____ 10. Location of existing and proposed storm drainage lines and inlets.
____ ____ 11. All lot and block numbers shown.
____ ____ 12. Location, width, and type of easements.
____ ____ 13. Sanitary sewer lines stubbed out to undeveloped adjacent property.
____ ____ 14. Proposed sanitary sewer line dimensioned to centerline of street.
____ ____ 15. Centerline stationing shown and related to profile.
____ ____ 16. Manholes and clean-outs stationed.
____ ____ 17. Legend (If applicable).
____ ____ 18. Manholes located at 500' maximum spacing and at all sewer line intersections, grade changes, and alignment changes.
____ ____ 19. Clean-outs located at maximum 250' from a manhole.
____ ____ 20. Call out any drop connections or water tight manhole covers.
____ ____ 21. Show GPS benchmarks on all sheets.

ENGR CITY C. PROFILE VIEW

____ ____ 1. Proposed grades are greater than minimum established and velocity in line does not exceed 10 fps.
____ ____ 2. Elevation of existing and proposed ground at centerline pipe.
____ ____ 3. Rim and flowline elevations at each manhole. Provide flowline elevations for all intersecting pipes.
____ ____ 4. Flowline elevations at 50-foot intervals (Max).
____ ____ 5. Fill areas noted.
____ ____ 6. Length, type, and size of pipe between manholes.
____ ____ 7. Location and elevation of water mains crossed by sanitary sewer line.
____ ____ 8. Location and elevation of storm drainage lines crossed by sanitary sewer line.
____ ____ 9. Locations of concrete encasement and/or concrete caps.
____ ____ 10. Location and elevation of existing and/or proposed pavement sections crossed.
____ ____ 11. Vertical scale of drawing.
____ ____ 12. Vertical and horizontal clearance between utilities meets current TX Department of Health and TX Water Commission requirements.
____ ____ 13. Show 100 year water surface elevation for ultimate conditions located in flood prone areas.

ENGR CITY D. DETAILS

____ ____ 1. Standard Construction Detail of service line locations.
____ ____ 2. Sanitary sewer system standard construction details meet all City

requirements.

____ ____ 3. Show standard trench backfill details and state compaction requirements.

____ ____ 4. Steps are not allowed in sanitary sewer manholes.

____ ____ 5. Show diameter of proposed manholes (4-foot minimum). Manhole covers shall have a 24" minimum diameter.

____ ____ 6. Manholes greater than 4' diameter require an eccentric cone

____ ____ 7. Drop manholes require a minimum 5' diameter; show drop inside of manhole.

____ ____ 8. Manholes deeper than 10', serving lines greater than 12", or containing multiple pipe connections require a minimum 5' diameter.

PART IV STORM DRAINAGE IMPROVEMENTS

If there is a FEMA or City of Grapevine floodplain located within the limits of the subject property, then the engineer will need to obtain a Floodplain Reclamation packet from the Public Works Department at 200 S. Main Street, Grapevine, Texas.

CITY	
____	**CITY USE ONLY:** Proposed drainage improvements are in accordance with the Master Drainage Plan.

ENGR CITY A. DRAINAGE AREA MAP

____ ____ 1. Show existing and proposed storm drainage lines and inlets.

____ ____ 2. Indicate sub areas for each inlet or set of inlets and off-site area.

____ ____ 3. Zoning indicated on all off-site drainage areas.

____ ____ 4. Show points of concentration for each drainage sub area.

____ ____ 5. Indicate runoff at all inlets, dead-end streets, and alleys or to adjacent subdivisions or undeveloped tracts.

____ ____ 6. Runoff calculations provided for the 5-year and 100-year storms.

____ ____ 7. For cumulative runoff, show calculations.

____ ____ 8. Indicate all crest, sags, and street intersections with flow arrows.

____ ____ 9. Provide the calculations for inlet time and pipe travel.

____ ____ 10. Legend.

____ ____ 11. Hydrology summary table.

____ ____ 12. Design criteria meets City requirements.

____ ____ 13. Street and R-O-W capacities tabulated.

____ ____ 14. On-site and offsite topography must show total drainage area for project.

____ ____ 15. Show all existing fences.

____ ____ 16. Show areas of dense tree coverage.

____ ____ 17. Flow arrows for surface drainage.

____ ____ 18. Delineation of drainage areas sufficient.

____ ____ 19. Cross sections of open channels and show limits of grading.

____ ____ 20. All lot and block numbers shown.

____ ____ 21. Drainage easements provided for all public drainage (related to plat):
Open, unlined channels – 30’ wider than top of channel
Open, lined channels – 15’ wider than top of channel
Enclosed system – 15’ minimum (depending on size and depth)

____ ____ 22. Increasing drainage onto downstream property requires a downstream drainage letter from all downstream owners accepting the increased runoff. Detention/retention may be used in lieu of the downstream drainage letter.

____ ____ 23. Permission to "Grade to Drain" may be required from downstream owners.

____ ____ 24. Show that existing downstream drainage systems are adequate to contain the Q100 storm. If downstream drainage is not adequate, then developer may be required to improve downstream systems.

ENGR CITY B. STORM SEWER PLAN VIEW

____ ____ 1. Plan of all storm drainage pipelines and laterals.
____ ____ 2. Specify at least Class III pipe (Class IV, etc if needed).
____ ____ 3. Provide inlets where street capacity (i.e. top of curb) is reached.
____ ____ 4. Indicate property lines along storm drainage lines.
____ ____ 5. Indicate location, size, and type of easements along proposed storm drainage lines.
____ ____ 6. Indicate size of inlet, lateral size and flowline, paving station, and top of curb elevation.
____ ____ 7. Use recessed inlets for thoroughfares. Local streets can use standard inlets.
____ ____ 8. Indicate the runoff concentrating at all inlets and direction of flow. Show runoff for all stub outs, pipes, and intakes.
____ ____ 9. Locations and cross sections of positive overflow swales required at low points. (One foot deep & ten foot wide minimum)
____ ____ 10. Minimum finished floor elevations where lots are adjacent to floodplain, creeks, and any area subject to flooding. These elevations must match final plat.
____ ____ 11. All lot and block numbers shown.
____ ____ 12. General notes pertaining to storm drainage improvements.
____ ____ 13. Location of existing and proposed R-O-W and pavement.
____ ____ 14. Type and size of existing and proposed headwalls.
____ ____ 15. Flow arrows for surface drainage.
____ ____ 16. Location and size of grouted riprap at outfalls.
____ ____ 17. All utility crossings shown.
____ ____ 18. 90-degree turns in storm drainage system or outfall are discouraged. Junction box or manhole must be provided in all cases.
____ ____ 19. Outfalls to ditches are encouraged to be placed in conjunction with driveway culverts. This reduces the number of headwalls in the ditch.
____ ____ 20. Location and size of energy dissipaters if required.
____ ____ 21. Storm drainage discharge at the flowline of creeks and channels with the last 20-feet at a slope not to exceed one percent, unless otherwise authorized.
____ ____ 22. Provide concrete TxDOT headwalls at all outfalls.

____	____	23.	Intercept laterals at 60 degrees with trunk lines, if possible.
____	____	24.	Curb inlets shall be recessed two (2) feet.
____	____	25.	Curb inlets have a minimum throat opening of 10 feet by 6".
____	____	26.	Note provided stating that the Contractor shall install a permanent bench mark monument(s), to be furnished by the City, in inlets per plans as directed by the City. The Owner's surveyor shall establish the bench mark elevation for "As Builts".
____	____	27.	Show manhole or junction box locations at 400 foot spacing for lines 24" or less and as needed on larger lines with a maximum of 800 foot between manholes or junction boxes.
____	____	28.	All earthen channels lined with erosion control blanket such as "Curlex Blanket".
____	____	29.	Underground storm sewers shall be used for all flows up to and including the equivalent capacity of a 72” conduit with an exit velocity of flowing full of 3’ per second. Lined channels may be used for flows exceeding a 72” conduit capacity. For flows exceeding a 96” conduit capacity, unlined channels may be used.
____	____	30.	All unlined channels shall have 15’ vehicle accessible areas on both sides of the channel. Lined channels require 15’ access on one side.
____	____	31.	Side slopes meet minimum requirements: 2:1 for lined channels 3:1 for unlined channels
____	____	32.	8” grouted rip-rap provided at all outfalls. (length specified)

ENGR CITY C. STORM SEWER PROFILES

____	____	1.	Show all hydraulics, velocity head changes, gradients, computations and profile outfall with typical section and computations.
____	____	2.	Show laterals on trunk lines with stations.
____	____	3.	Show 100-year water surface elevation at outfall of storm drainage system.
____	____	4.	Grades of existing and proposed pavement.
____	____	5.	Vertical and horizontal scale of drawing.
____	____	6.	Proposed grades of existing and proposed storm sewer lines.
____	____	7.	Location and elevation of 100-year H.G.L.
____	____	8.	Elevation of existing and proposed ground and pavement over proposed pipelines.
____	____	9.	Top and flowline elevations of inlets.
____	____	10.	Top and flowline elevations of area drop inlets.
____	____	11.	Flowline elevations at 100-foot intervals (Max).
____	____	12.	Fill areas compaction noted.
____	____	13.	Length, type, slope, and size of pipe between inlets or junction boxes.
____	____	14.	Diameter of proposed junction boxes (4-foot min.).
____	____	15.	Location and elevation of water mains crossed by storm sewer lines and inlets (Concrete encase if less than 1-foot).
____	____	16.	Location and elevation of sanitary sewer crossed by storm sewer lines (Concrete encase if less than 1-foot).
____	____	17.	Locations of concrete encasement and/or concrete caps.
____	____	18.	Provide lateral profiles for all laterals.

____ ____ 19. Provide 8" minimum diameter grouted rock rip-rap at all outfall conditions.

ENGR CITY D. DETAILS

____ ____ 1. Drainage system standard construction details meet all City requirements.
____ ____ 2. Show standard trench backfill details and state compaction requirements.

PART V PAVING IMPROVEMENTS

CITY

____

CITY USE ONLY: The street widths and rights-of-way meet the minimum requirements of the Master Thoroughfare Plan.

ENGR CITY A. PLAN VIEW

____ ____ 1. General Notes for paving.
____ ____ 2. Centerline stationing shown and related to profile.
____ ____ 3. All lot and block numbers shown.
____ ____ 4. All required sidewalks shown (4' on local and 5' on thoughfares).
____ ____ 5. Intersecting streets.
____ ____ 6. Type and width of pavement.
____ ____ 7. Type and width of sidewalks.
____ ____ 8. Spot elevations in ditches.
____ ____ 9. Curb and gutter shown for all streets.
____ ____ 10. Dummy joints and expansion joints for the curb and gutter, sidewalks, and street shown.
____ ____ 11. Washed aggregate driveway approaches, sidewalks or curb and gutter are not allowed.
____ ____ 12. Pavement headers at dead ends.
____ ____ 13. Location and size of inlets.
____ ____ 14. Paving station at the center of each inlet.
____ ____ 15. Top of curb elevation at each inlet.
____ ____ 16. Pavement properly dimensioned to R-O-W.
____ ____ 17. Radii of curves at centerline stations.
____ ____ 18. Radii of centerline curves meet requirements

	Design Speed	Centerline Radius
Major Thoroughfare, Type A & B	55 MPH	2,000'
Minor Thoroughfare, Type C & D	45 MPH	1,125'
Collector Streets, Type E & F	40 MPH	800'
Residential Streets, Type G	30 MPH	300'

____ ____ 19. Top of curb elevations at quarter points on cul-de-sacs.

____	____	20.	Top of curb elevations at PC's.
____	____	21.	Top of curb elevations at PT's.
____	____	22.	Drainage clarified by flow arrows and spot elevations.
____	____	23.	Barrier free sidewalk ramps at street intersections (three sidewalk ramps are required at tee intersections). Show R.O.W. corner clips.
____	____	24.	Traffic control details shown (i.e. stop bars, striping, buttons).
____	____	25.	**Proper sight distance shall be provided at all intersections. The required sight distance for each intersection shall be calculated using AASHTO design criteria. Within the limits of the required sight distance triangles, special attention should be paid to the installation of future fencing and/or landscaping.**
____	____	26.	Check for any place water might pond. Are inlets located at sag points on vertical curves?
____	____	27.	Check ends of project for drainage.
____	____	28.	Median modifications on existing thoroughfares.
____	____	29.	Show existing driveways and inlets on both sides of street at all proposed median openings.
____	____	30.	Dowel bars into existing pavement where required when abutting with new construction .

ENGR CITY B. PROFILE VIEW

____	____	1.	Vertical curves meet design criteria. Do vertical curves meet minimum sight distance requirements for design speed?
____	____	2.	Profile shown at existing left and right ROW and proposed left and right top of curb.
____	____	3.	Fill areas checked for drainage.
____	____	4.	Curb PI's for intersecting streets shown.
____	____	5.	Minimum street grade is 0.60%.
____	____	6.	Maximum street grades are 5%, 7.5% and 10% for thoroughfare streets, collector streets and residential streets, respectively.
____	____	7.	Grade changes with an algebraic difference greater than 1% connected with vertical curves.
____	____	8.	Intersections designed to avoid abrupt grade changes through the intersection. (Street crowns may be reduced to ½ of normal crown in the intersection to accomplish a smoother grade change.)
____	____	9.	Valley gutters are not allowed to extend through intersections. Curb inlets need to be installed upstream from intersections to collect storm drainage.

ENGR CITY C. TYPICAL PAVEMENT SECTION

____	____	1.	Typical section.
____	____	2.	Pavement cross slopes and crown specified.
____	____	3.	Centerline dimensioned to ROW lines and back of curbs.
____	____	4.	Detail of pavement reinforcing and subgrade shown.
____	____	5.	Location and detail of sidewalks.

____ ____ 6. Density requirements (95% Standard Proctor within street R.O.W.).
____ ____ 7. Typical section for left turn lanes.
____ ____ 8. ROW drains into pavement.
____ ____ 9. Size and spacing of reinforcing steel shown.
____ ____ 10. A subgrade note shall be placed on the plans that states: "A Geotechnical Professional Engineer will recommend to the City of Grapevine the stabilization requirements prior to starting street construction".